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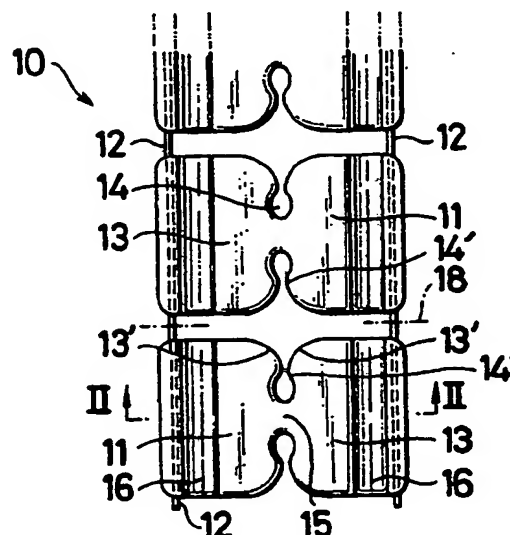
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**W-8000 München 2(DE)**(54) **Elongated strips for slide fastener end stops.**

(57) An elongated strip (10, 10a, 10b) providing a multiplicity of prospective end stops (11, 11a, 11b) for a slide fastener is disclosed. A succession of prospective end stops (11, 11a) in the strip are interconnected by a flexible connecting cord (12, 12b) such that the strip can be disposed flexible and supple and thus conveniently wound on a reel (30). Each end stop (11, 11a, 11b) is reduced centrally in thickness to provide a thin bridge (15, 15a) which serves as a hinge about which the end stop is accurately and easily folded.

**FIG. 1****EP 0 454 144 A1**

This invention relates to end stop members for slide fasteners and more particularly to an elongated strip of a synthetic resin having a multiplicity of serially interconnected prospective end stop members.

End stop members made of a plastic, most commonly thermoplastic material are usually preformed and applied directly by injection molding onto a slide fastener tape at one end thereof to form a top end stop or at the opposite end to form a bottom end stop, such end stops being adapted to limit the movement of a slider thereat to prevent the latter from moving apart from the slide fastener. Injection molding machines used in forming and applying slide fastener end stops are rather difficult to handle with respect to their thermal control and setting the end stops in respective molds, particularly where end stops are switched from one color to another entailing undue waste of time and materials.

With the foregoing drawbacks of the prior art in view, the present invention seeks to provide an elongated strip of a synthetic resin having a succession of interconnected end stops which can be readily cut into an individual end stop and subsequently firmly applied to a slide fastener stringer.

The invention also seeks to provide such elongated strips of various colors having a multiplicity of prospective end stops flexibly interconnected such that each strip can be stored conveniently separately in a reel or other cartridge means.

According to the invention, there is provided an elongated strip formed from a synthetic plastic material and providing a multiplicity of prospective end stop members for a slide fastener, comprising a succession of serially interconnected end stop members and a plurality of flexible connecting means extending longitudinally through opposite outer edges of the strip and interconnecting adjacent ones of the end stop members in spaced apart relation.

The above and other advantages and features of the invention will be better understood from the following detailed description taken in conjunction with the accompanying drawings which illustrate by way of example some preferred embodiments.

Figure 1 is a fragmentary plan view on enlarged scale of an elongated strip according to one form of the invention;

Figure 2 is a transverse cross-sectional view taken on the line II - II of Figure 1;

Figure 3 is a transverse cross-sectional view of an individual end stop showing the same folded for attachment onto a slide fastener tape;

Figure 4 is a cross-sectional view of the end stop shown attached to the tape;

Figure 5 is a fragmentary perspective view on enlarged scale of a slide fastener stringer to

which the end stop from the strip is attached;

Figure 6 is a perspective view of the strip shown wound on a reel;

Figure 7 is a view similar to Figure 1 but showing a strip according to another form of the invention;

Figure 8 is a fragmentary transverse cross-sectional view taken on the line VIII - VIII of Figure 7;

Figure 9 is a fragmentary perspective view on enlarged scale of a strip according to still another form of the invention; and

Figure 10 is a fragmentary perspective view on enlarged scale of a pair of slide fastener stringers to which the end stop of Figure 9 is attached.

Referring now to the drawings and Figure 1 in particular, there is shown a portion of an elongated strip 10 formed from a synthetic plastic material and having a succession of serially interconnected prospective end stop members 11. Adjacent end stop members 11 are spaced apart by a small distance and interconnected by a pair of flexible connecting cords 12 such as of a textile yarn thread, a synthetic plastic monofilament or other flexible or pliable materials, the cords 12 extending in parallel longitudinally through opposite outer edges of the strip 10. Each of the prospective end stop members 11 has a pair of identical legs 13, 13 which are adapted to fold across the width of the strip 10 in a manner hereinafter described. Each end stop member 11 is notched from opposite ends along a central longitudinal line of the strip 10 to provide a pair of inwardly expanded oblong bights 14 confronting each other across a bridge 15 formed centrally between the legs 13, 13. The edges 14' of each bight 14 merge with rounded-off inner peripheral edges 13', 13' of the respective legs 13, 13. The bridge 15 is reduced in thickness as better shown in Figure 2 to serve as a hinge about which the end stop member 11 can be accurately and easily folded to bring the two legs 13, 13 in superimposed relation for mounting astride of a tape edge as depicted in Figure 3, in which instance the rounded peripheral edges 13', 13' of the legs 13, 13 protrude outwardly beyond the bridge 15 as shown in Figure 5.

As better shown in Figure 2, the legs 13, 13 of the end stop member 11 each have an arcuate groove 16 extending adjacently along their respective outer longitudinal edges and configured to fit snugly over a beaded edge 17 of a slide fastener stringer tape T which is usually cross-sectionally round.

The elongated end stop forming strip 10 thus constructed is cut transversely along a line 18 extending transversely across the connecting cords 12 between adjacent prospective end stop mem-

bers 11 to provide an individual end stop 11'. This end stop 11' is shown attached with heat and pressure as by-means of the arrangement of a supersonic horn 19 and an anvil 20 schematically shown in Figure 4 onto a top end portion of a slide fastener stringer-F which-as-shown-in-Figure 5 comprises a support tape T and a row of coupling elements E secured thereto. Advantageously, the end stop 11' when thus attached to the support tape T is free of any sharp edge portions which tend to catch and impair a garment fabric on which the slide fastener is used. This is due to the construction of the end stop 11' in which the bridge 15 about which it is folded is protected by the rounded-off peripheral edges 13', 13' of the legs 13, 13 which protrude beyond the region of the bridge 15 as better shown in Figure 5.

Further advantageously, the prospective end stop members 11 are interconnected by the flexible connecting cords 12 which render the strip 10 flexible and supple as a whole, thus allowing a substantial length of the strip 10 to be conveniently wound on a reel 30 as depicted in Figure 6.

A modified elongated strip 10a according to the invention is shown in Figures 7 and 8 and is substantially geometrically identical to the strip 10 in Figure 1 in that each of the prospective end stop members 11a comprises a pair of identical legs 13a, 13a, a pair of hights 14a, 14a, a bridge 15a and a groove 16a, except that the succession of prospective end stop members 11a are interconnected by a connecting extension 21 integral with adjacent end stop members 11a in lieu of the use of the flexible connecting cords 12. The connecting extension 21 extends between adjacent end stop members 11a and is reduced in thickness as shown in Figure 8 so as to be easily cut along a transverse cut line 18a.

Figure 9 shows a further modified form of strip 10b according to the invention which is adapted to be applied to a bottom end portion of slide fastener stringers F as shown in Figure 10. The strip 10b has a multiplicity of interconnected prospective end stop members 11b each of which comprises a stem 22 and a pair of upper and lower legs 13b extending laterally from opposite sides of the stem 22 and defining therebetween an arcuate groove 16b for receiving and clamping the beaded edge 17 of the stringer tape T as shown in Figure 10. Importantly, adjacent end stop members 11b are interconnected by flexible connecting cords 12b which are similar to those used in the embodiment of Figures 1 - 5 and which extend longitudinally through opposite outer edges of the strip 10b, the arrangement being that the structure of the strip 10b is rendered flexible and supple as a whole to permit a substantial length of the strip 10b to be reeled for convenient storage.

## Claims

1. An elongated strip (10, 10a, 10b) formed from a synthetic plastic material and providing a multiplicity of prospective end stop members (11, 11a, 11b) for a slide fastener, said strip comprising a succession of serially interconnected end stop members (11, 11a, 11b) and a plurality of flexible connecting means (12, 21, 12b) extending longitudinally through opposite outer edges of said strip (10, 10a, 10b) and interconnecting adjacent ones of said end stop members (11, 11a, 11b) in spaced apart relation.
2. An elongated strip (10, 10a) according to claim 1 characterized in that each of said end stop members (11, 11a, 11b) has a pair of identical legs (13, 13a) and a bridge (15, 15a) of reduced thickness formed centrally between said legs (13, 13a, 13b) and serving as a hinge about which said legs are folded across the width of said strip (10, 10a).
3. An elongated strip (10, 10a) according to claim 2 characterized in that said legs (13, 13a) have respective peripheral edges (13') rounded off and protruding beyond the region of said bridge (15, 15a) when said legs are folded.
4. An elongated strip (10, 10a, 10b) according to claim 1 characterized in that said flexible connecting means (12, 12b) is a textile yarn thread.
5. An elongated strip (10, 10a, 10b) according to claim 1 characterized in that said flexible connecting means (12, 12b) is a synthetic plastic monofilament.
6. An elongated strip (10, 10a, 10b) according to claim 1 characterized in that said flexible connecting means (21) comprises an integral extension (21) of said strip which is reduced in thickness.
7. An elongated strip (10, 10a) according to claim 2 characterized in that each of said end stop members (11, 11a, 11b) is notched from opposite ends along a central longitudinal line of said strip to provide a pair of oblong hights (14, 14a) confronting each other across said bridge (15, 15a).

FIG. 1

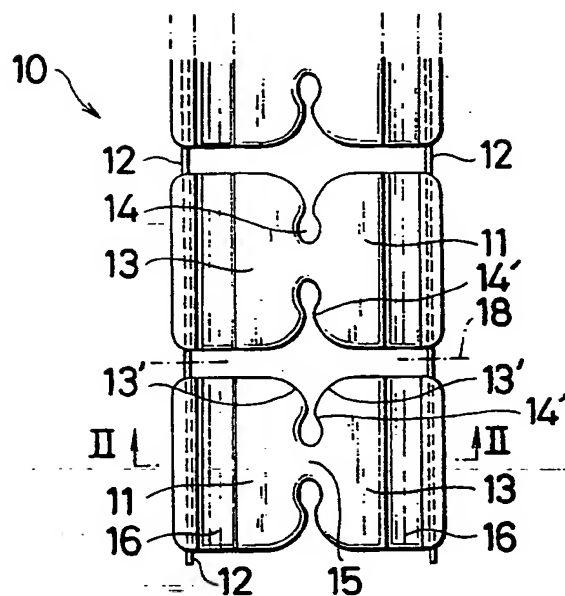


FIG. 2

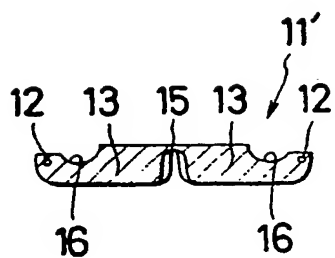
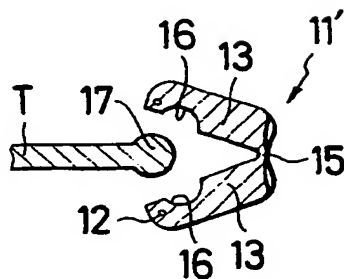
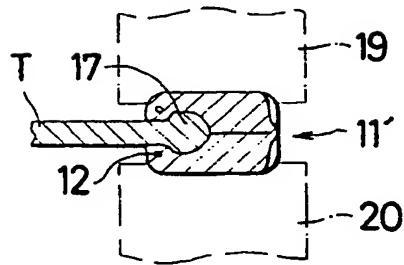


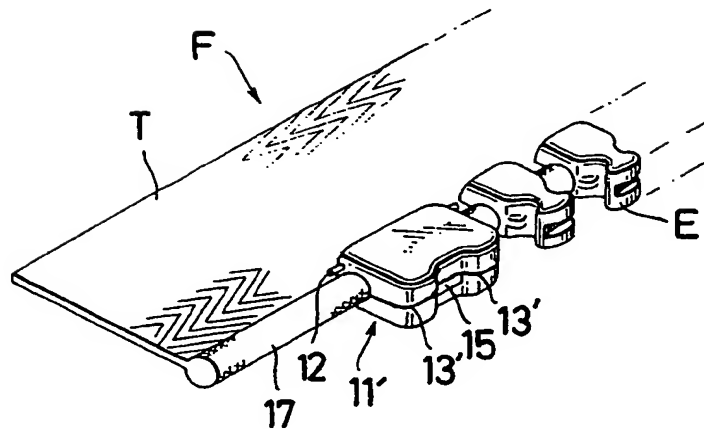
FIG. 3



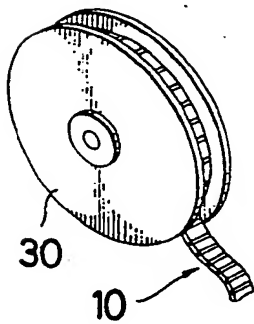
**FIG. 4**



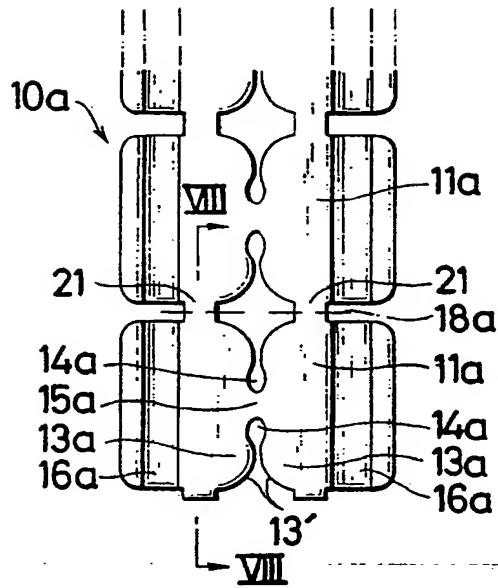
**FIG. 5**



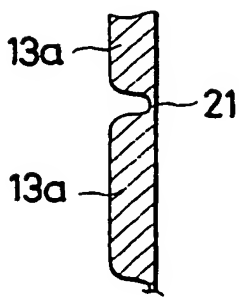
**FIG. 6**



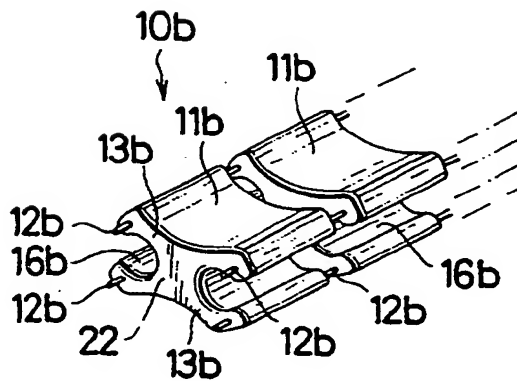
**FIG. 7**



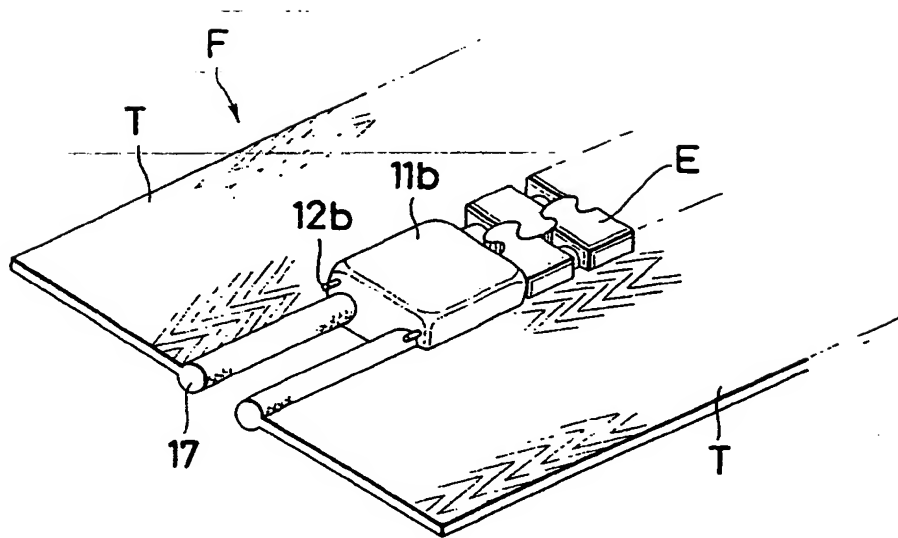
**FIG. 8**



**FIG. 9**



**FIG. 10**





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## EUROPEAN SEARCH REPORT

Application Number

EP 91 10 6784

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	FR-A-2 450 076 (OPTILON W. ERICH HEILMANN GMBH.) * page 5, line 20 - line 33 * * page 7, line 12 - page 11, line 16; figures 1-9 *	1,2,4,6	A 44 B 19/38
A	US-A-4 331 493 (CH. T. LAWRENCE) * column 2, line 41 - column 4, line 49; figures 1-6 *	1,2,4	
A	US-A-2 996 797 (A.E. CARLILE) * column 2, line 23 - column 4, line 15; figures 1-15 *	1,2,4,6	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A 44 B A 41 C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of search 07 August 91	Examiner GARNIER F.M.A.C.
<b>CATEGORY OF CITED DOCUMENTS</b> X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons &: member of the same patent family, corresponding document			